THE BRAIN: UNDERSTANDING NEUROBIOLOGY THROUGH THE STUDY OF ADDICTION		
Vermont Science G.E.s: High School		
Lesson	**G.E.**	**Statement**
3, 4	**S9-12:1:1**	Framing testable questions showing evidence of observations and prior knowledge to illustrate cause and effect.
3, 4	**S9-12:1:2**	Developing a testable question appropriate to the scientific domain being investigated.
3, 4	**S9-12:2:1**	Developing a testable/guiding hypothesis and predictions based upon evidence of scientific principles.
3, 4	**S9-12:2:2**	Predicting results (evidence) that support the hypothesis.
3, 4	**S9-12:2:3**	Clearly distinguishing cause and effect within a testable/guiding hypothesis.
3, 4	**S9-12:3:1**	Writing a plan related to the question and prediction that includes: a. Procedures that incorporate appropriate protection (e.g., no food in lab area). b. Appropriate tools, units of measurement and degree of accuracy. c. Components that reflect current scientific knowledge and available technology. d. Use of scientific terminology that supports the identified procedures
3, 4	**S9-12:4:1**	Collecting significant data by completing multiple trials
	S9-12:4:2	Evaluating and revising procedures as investigation progresses.
3, 4	**S9-12:5:1**	Representing data quantitatively to the appropriate level of precision through the use of mathematical calculations.
3, 4	**S9-12:5:3**	Recording accurate data, free of bias.
3, 4	**S9-12:6:3**	Critically examining and explaining the relationship of evidence to the findings of others (e.g., classmates or scientists in the field).
3, 4	**S9-12:7:1**	Proposing, synthesizing, and evaluating alternative explanations for experimental results.
3, 4	**S9-12:7:2**	Citing experimental evidence within an explanation.
2, 3, 4	**S9-12:7:3**	Including logically consistent position to explain observed phenomena.
3, 4	**S9-12:7:4**	Comparing an experimental conclusion to other proposed explanations by peer review (e.g., students, scientists or local interest groups).
3, 4	**S9-12:7:5**	Conducting objective scientific analysis and evaluating potential bias in the interpretation of evidence.
3, 4	**S9-12:7:6**	Identifying and evaluating uncontrolled variables inherent in experimental model.
3, 4, 5	**S9-12:8:2**	Predicting/recommending how scientific conclusions can be applied to civic, economic or social issues.
3, 4	**S9-12:8:3**	Proposing and evaluating new questions, predictions, procedures and technology for further investigations.
2, 3	**S9-12:30:1**	Predicting, explaining and drawing conclusions about the direction of movement of substances across a membrane.
2, 3	**S9-12:41:1**	Diagramming a feedback loop that illustrates how several human body systems work together to restore homeostasis in response to an external stimulus (environmental/behavioral) (e.g., exercise, immune response, fight/flight, stress,

		drugs, normal cellular metabolism, any nervous system response).
3, 4	**S9-12:41:2**	Explaining examples of how the human body may be affected by the state of the internal or external environment and by heredity and by life experience (e.g., effects of malnutrition).
3, 4, 5	**S9-12:41:3**	Using evidence to predict and explain how the effect of various environmental or hereditary factors influence the continuation of the human species (reproductive success) (e.g., anorexia and/or steroid use, radiation/toxic wastes/drug use, mutagenic agents and/or improper diet/obesity).
2, 3	**S9-12:42:3**	Showing through models/diagrams/graphic organizers how specific biological abnormalities alter the normal functioning of human systems (e.g., feedback diagram).
Vermont Mathematics G.E.s: High School		
Lesson	**G.E.**	**Statement**
3, 4	**MHS:1**	Accurately solves problems involving conceptual understanding and magnitude of real numbers, or simple vectors.
3, 4	**MHS:7**	Estimates and evaluates the reasonableness of numerical computations and solutions, including those carried out with technology.
3	**MHS:15**	Measures and uses units of measures appropriately and consistently when solving problems across the content strands. Makes conversions within or across systems and makes decisions concerning an appropriate degree of accuracy in problem situations involving measurement. Uses measurement conversion strategies, such as unit/dimensional analysis or uses quotient measures, such as speed and density that give per unit amounts or uses product measures, such as person hours to solve problems.
4	**MHS:19:1**	Solves and models problems by formulating, extending, or generalizing linear and common nonlinear functions/relations.)
3, 4	**MHS:19:2**	And makes connections among representations of functions/relations (equations, tables, graphs, symbolic notation, text).
3, 4	**MHS:23**	Interprets a given representation(s) (box-and-whisker or scatter plots, histograms, frequency charts) to make observations, to answer questions or justify conclusions, to make predictions, or to solve problems.
3, 4	**MHS:25**	Organizes and displays data using scatter plots, histograms, or frequency distributions to answer questions related to the data, to analyze the data or to solve problems; or identifies representations or elements of representations that best display a given set of data or situation, consistent with the representations required in MHS: 23.
3	**MHS:28**	In response to a question, designs investigations, considers how data-collection methods affect the nature of the data set (i.e., sample size, bias, randomization, control group), collects data using observations, surveys and experiments, purposes and justifies conclusions and predictions based on the data.
3, 4	**MHS:30**	Demonstrate understanding of mathematical problem solving and communication by: • Approach and Reasoning—The strategies and skills used to solve the problem, and the reasoning that supports the approach; • Execution—The answer and the mathematical work that supports it; • Observations and Extensions—Demonstration of observation, connections, application, extensions, and

		generalizations; • Mathematical Communication—The use of mathematical vocabulary and representation to communicate the solution; and • Presentation—Effective communication of how the problem was solved, and of the reasoning used.
Vermont Reading G.E.s: High School		
Lesson	**G.E.**	**Statement**
All lessons	**RHS:3**	Identifying multisyllabic words by using knowledge of sounds, syllables, derivational roots and affixes, including foreign language derivations.
All lessons	**RHS:6:2**	Selecting appropriate words or explaining the use of words in context, including connotation and denotation; or use of precise or technical vocabulary, including content-specific vocabulary; or use of words with multiple meanings.
All lessons	**RHS:7**	Uses comprehension strategies (flexibly and as needed) while reading literary and informational text.
All lessons	**RHS:12:1**	Obtaining information from text features (e.g., transitional devices, table of contents, glossary, index, bold or italicized text, headings, graphic organizers, charts and graphs, illustrations, or subheadings).
All lessons	**RHS:12:2**	Using information from the text to answer questions or to state the central idea or provide supporting key details.
All lessons	**RHS:12:3**	Organizing information to show understanding or relationships among facts, ideas, and events (e.g., representing key points within text through charting, mapping, paraphrasing, summarizing, comparing/contrasting, or outlining).
All lessons	**RHS:16:1**	Explaining connections about information within a text, across texts, or to related ideas.
All lessons	**RHS:16:2**	Synthesizing and evaluating information within or across text(s) (e.g., constructing appropriate titles; or formulating assertions or controlling ideas).
All lessons	**RHS:16:5**	Making inferences about causes or effects.
All lessons	**RHS:19**	Demonstrates participation in a literate community by… • Self-selecting reading materials in line with reading ability and personal interests • Participating in in-depth discussions about text, ideas, and student writing by offering comments and supporting evidence, recommending books and other materials, and responding to the comments and recommendations of peers, librarians, teachers, and others.
Vermont Writing G.E.s: High School		
Lesson	**G.E.**	**Statement**
All lessons	**WHS:2:1**	Applying rules of standard English usage to correct grammatical errors.
All lessons	**WHS:2:2**	Applying capitalization rules.
All lessons	**WHS:2:3**	Applying appropriate punctuation rules to various sentence patterns.
All lessons	**WHS:3:1**	Independently applying spelling knowledge in proofreading and editing of writing.
2, 3, 4, 5	**WHS:4:2**	Using the paragraph form: indenting, main idea, supporting details.

All lessons	**WHS:4:4**	Using a format and text structure appropriate to the purpose of the writing.
All lessons	**WHS:5:1**	Selecting key ideas to set context appropriate to audience.
All lessons	**WHS:5:2**	Making thematic connections between texts, prior knowledge, or the broader world of ideas.
All lessons	**WHS:7:3**	Using effective voice and tone (word choice and sentence patterns) for desired effect on reader.
All lessons	**WHS:7:4**	Excluding loosely related or extraneous information.
3, 4	**WHS:8:1**	Using an organizational text structure appropriate to focus/controlling idea.
3, 4	**WHS:8:2**	Selecting appropriate information to set context throughout the report; may include a lead/hook.
3, 4	**WHS:8:4**	Drawing a conclusion by synthesizing information from report and relating it to broader ideas/concepts.
All lessons	**WHS:9:1**	Stating and maintaining a focus/controlling idea/thesis (purpose).
All lessons	**WHS:9:2**	Writing with a sense of audience, if appropriate.
All lessons	**WHS:10:1**	Including facts and details relevant to focus/controlling idea, and excluding extraneous information.
All lessons	**WHS:10:2**	Including sufficient details or facts for appropriate depth: naming, describing, explaining, comparing, use of visual images.
3	**WHS:13:2**	Using and defining specific technical vocabulary, appropriate to audience and purpose.
3	**WHS:13:4**	Using details and examples to help the reader understand and visualize the process.
3	**WHS:13:6**	Providing a conclusion that advances the reader's understanding or appreciation of the process.
5	**WHS:15:2**	Stating and maintaining a clear position on the problem or issue (purpose) in persuasive writing.
5	**WHS:16:3**	Providing convincing and relevant arguments and/or reasons.
5	**WHS:16:5**	Addressing the reader's potential concerns or counterarguments.
5	**WHS:16:6**	Writing an effective conclusion.
Vermont Health Education G.E.s: High School		
Lesson	**G.E.**	**Statement**
4, 5	**ATOD:HE2:a**	Describing the signs and symptoms of alcohol and other drug use, including the progression from non-use through addiction.
3, 4, 5	**ATOD:HE2:b**	Evaluating the short and long-term effects of alcohol, tobacco, and other drugs on health.
3, 4, 5	**ATOD:HE2:c**	Analyzing the impact of personal health behaviors on body systems (e.g., alcohol and drug affects on brain function; alcohol, tobacco and other drug use during pregnancy).
4, 5	**ATOD:HE2:d**	Analyzing how public health policies and laws influence health promotion, injury and disease prevention. (e.g., DUI laws, alcohol and tobacco-free environments, media, funding, taxation).
4	**ATOD:HE3:a**	Analyzing the impact of internal (e.g., experiences, perceptions, self-respect) and external (e.g., technology, media, peers, social norms) factors that impact use, abuse, and non-use of tobacco, alcohol, and other drugs.
5	**ATOD:HE4:a**	Demonstrating the ability to access appropriate sources of support and treatment available in the school, community,

		and state for health issues related to alcohol, tobacco, and other drugs.
4	**ATOD:HE7:b**	Evaluating the internal and social pressures that influence decisions to use, including the data relevant to youth alcohol and other drug use.
5	**FSSH:HE4:a**	Demonstrating the ability to access appropriate sources of support and treatment available for a variety of health issues.
3, 4, 5	**FSSH:HE4:c**	Demonstrating the ability to evaluate resources from home, school, and/or community that provide valid health information.
4	**FSSH:HE5:b**	Demonstrating effective verbal and nonverbal communication skills to enhance health and build and maintain healthy relationships, (e.g., positive peer support, assertive, "I"-messages).
4, 5	**FSSH:HE5:c**	Demonstrating the ability to advocate for health promoting opportunities for self and others.
3, 4, 5	**PHW:HE2:a**	Analyzing how behavior can impact health maintenance and disease prevention, including the short and long-term consequences of safe, risky, and harmful behaviors.
5	**PHW:HE2:d**	Analyzing how public health policies and laws influence health promotion and disease prevention.
4	**PHW:HE3:a**	Analyzing the impacts of internal (e.g., experiences, perceptions, self-respect) and external (e.g., technology, media, peer, community) factors on personal health behavior.
3, 4, 5	**PHW:HE4:c**	Demonstrating the ability to evaluate resources from home, school, and/or community that provide valid health information.
4, 5	**PHW:HE5:a**	Demonstrating the ability to advocate for health promoting opportunities for self and others, (e.g., assisting in the development of public health policies and laws, or becoming actively engaged in issues that affect health).
4, 5	**PHW:HE7:b**	Analyzing the immediate and long-term impact of health decisions on the individual, family, and community, including environmental issues, public health policies, and government regulations.